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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/658,541 | 09/08/2003 | Jeffrey T. LaBelle | 9138-0092US | 3256 |
| 28529 | 7590 | 08/25/2005 | EXAMINER | |
| GALLAGHER & KENNEDY, P. A. 2575 E. CAMELBACK RD. #1100 PHOENIX, AZ 85016 | | | KOSSON, ROSANNE | |
| | | ART UNIT | PAPER NUMBER | |
| | | 1653 | | |

DATE MAILED: 08/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Advisory Action
Before the Filing of an Appeal Brief**

Application No.

10/658,541

Applicant(s)

LABELLE ET AL.

Examiner

Rosanne Kosson

Art Unit

1653

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED on July 22, 2005 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:

- a) The period for reply expires 3 months from the mailing date of the final rejection.
- b) The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because

- (a) They raise new issues that would require further consideration and/or search (see NOTE below);
- (b) They raise the issue of new matter (see NOTE below);
- (c) They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
- (d) They present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: _____. (See 37 CFR 1.116 and 41.33(a)).

4. The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).

5. Applicant's reply has overcome the following rejection(s): _____.

6. Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

7. For purposes of appeal, the proposed amendment(s): a) will not be entered, or b) will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.

The status of the claim(s) is (or will be) as follows:

Claim(s) allowed: _____.

Claim(s) objected to: _____.

Claim(s) rejected: _____.

Claim(s) withdrawn from consideration: _____.

AFFIDAVIT OR OTHER EVIDENCE

8. The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).

9. The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).

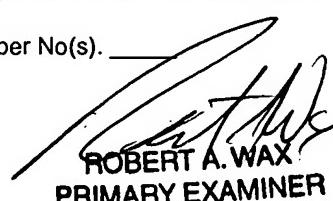
10. The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. The request for reconsideration has been considered but does NOT place the application in condition for allowance because:

12. Note the attached Information Disclosure Statement(s). (PTO/SB/08 or PTO-1449) Paper No(s). _____.

13. Other: See comments below.



ROBERT A. WAX
PRIMARY EXAMINER

Art Unit: 1653

The amendment to the drawings is acceptable. The following amendments to the specification, however, are not acceptable because they add new matter. Errors in description in the specification as filed that are not clearly typographical errors may not be corrected, and post-filing date discoveries and information not found in the priority document (provisional application in the instant case) may not be added.

Thus, the description of added Fig. 9A is not acceptable. The words "exemplary" and "characteristic" must be deleted. The grammar of the remainder of the description may be improved.

On p. 14, line 13, the reference to Fig. 5 may not be changed to Fig. 6.

On p. 19, line 9, "function (stability)" may not be changed to "selected function (i.e., stability).

These portions of the specification may be amended to read as follows.

Between pages 10 and 11:

Fig. 9A is an ~~exemplary~~ normalized absorbance spectral plot of the RC⁻ chlorosome[;].

On p. 14, after line 10:

Absorbance spectra of isolated RC⁻ chlorosomes in Tris buffer exhibit the [characteristic] absorbance peaks (solid line) shown in the normalized absorbance spectral plot of Fig. 9A. Immobilizing the RC⁻ chlorosomes in PVAC polymer, however, destroyed the chlorosomes as evidenced by the dashed line normalized absorbance absorbent spectrums plotted in Fig. 9A. This was true of other immobilization attempts with other polymers.

Intact *C. aurantiacus* bacteria display a unique adaptive ability to reversibly and enzymatically assemble and disassemble the foregoing structures to protect the organism from photo-induced damage. As is expected, the spectral peaks of Fig. 9 of Fig. 6 are highly related to growth conditions of the whole cell *C. aurantiacus* bacteria. These are also related to the isolation techniques that result in purified chlorosomes. An abbreviated form of the important basic mechanisms of energy transfer that occur between the molecules of the RC⁻ chlorosome are as depicted in Fig. 10.

On p. 19, lines 1-10:

Another technique utilized the evaporation procedure as well as an aqueous method to allow incorporation of the chlorosomes onto a glass surface. Both techniques start with taking 0.5 µl of a known concentration of chlorosomes and placing it onto a borosilicate glass coverslip (Fisher Scientific). In the evaporation method, evaporation, under vacuum, is performed overnight and then the sample is sealed onto a fluorescent antibody microslide (Fisher Scientific). In the physical adsorption method, the slide is prepared in the aqueous phase and inverted during sealing, thus allowing for ensuring a hydrated sample as well as diffusion of the chlorosomes onto the surface of the hydrophobic glass. Samples were also studied under laser scanning confocal microscopy (instrument from LEICA) to investigate orientation and selected function (i.e. stability) was observed with absorbance spectroscopy of the sample afterwards.

Applicants' remaining amendments to the specification are acceptable.

Additionally, claims 27 and 28 must be amended to place the claims in condition for allowance. All withdrawn claims must be canceled. In claim 27, the full name of the bacterium must appear. Claim 28 is incomplete as written, because it recites a method of force adapting *C. aurantiacus* bacteria comprising the step of identifying the environmental factors that may be used in force adoption. The claim also requires a step of exposing the *C. aurantiacus* bacteria to an environment in which these factors are present to force adapt them. The claims may be amended as follows.

27. (currently amended) A method of making a hybrid photoactive device, comprising:
including:

(a) providing photosynthetic chlorosome-containing bacteria *Chloroflexus C. aurantiacus*;[[.]]

Art Unit: 1653

(b) extracting the RC⁻ chlorosomes from the bacteria;[.]])
(c) providing a photoactive semiconductor;[.]]) and
(d) locating the RC⁻ chlorosomes proximate a light receiving surface of the photoactive semiconductor, wherein step (c) includes providing a photoactive semiconductor having a light response that is diminished at a first range of light wavelengths, and step (a) comprises choosing an RC⁻ chlorosome having
(i) light response that is enhanced at a second range of light wavelengths that coincides, at least in part, with the first range of light wavelengths, and
(ii) light emission outside the first range of light wavelengths, and
wherein choosing an RC- chlorosome comprises force adapting bacteria with chlorosomes with the light response enhanced at the second range of light wavelengths and light emission outside the first range.

28. (currently amended) The method according to claim 27, wherein force adapting comprises
(a) design of experiment determination of environmental factors forcing adaptation of bacteria based upon multiple environmental variables applied to *C. aurantiacus* sample bacteria; and
(b) exposing the *C. aurantiacus* bacteria to an environment in which the factors identified in the previous step are present to force adapt the samples.

35-43. (canceled)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rosanne Kosson whose telephone number is 571-272-2923. The examiner can normally be reached on Monday-Friday, 8:30-6:00, with alternate Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jon Weber can be reached on 571-272-0925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Rosanne Kosson
Examiner
Art Unit 1653

rk/2005-08-10



UNITED STATES PATENT AND TRADEMARK OFFICE

Facsimile Transmission

To: Name: Mr. Thomas MacBlain
Company: Gallagher & Kennedy, PA
Fax Number: 6025308500
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From: Name:
Voice Phone:

37 C.F.R. 1.6 sets forth the types of correspondence that can be communicated to the Patent and Trademark Office via facsimile transmissions. Applicants are advised to use the certificate of facsimile transmission procedures when submitting a reply to a non-final or final Office action by facsimile (37 CFR 1.8(a)).

Fax Notes:

Please review the attached draft Examiner's Amendment. A couple of amendments to the claims are still needed. In claim 27, the full name of the bacterium must appear. Claim 28 is incomplete. It recites a method of force adapting comprising the step of determining the factors that can force adapt bacteria. But, the claim needs another step, the step of exposing the bacteria to an environment in which these factors are present to force adapt them.

Please let me know if these amendments are acceptable to your client.
Thanks!

Date and time of transmission: Monday, August 08, 2005 9:16:56 AM
Number of pages including this cover sheet: 06

DRAFT

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows.

The specification is amended to read as follows.

Between pages 10 and 11:

Fig. 9A is an exemplary normalized absorbance spectral plot of the RC chlorosome[;].

On p. 14, after line 10:

~~Absorbance spectra of isolated RC chlorosomes in Tris buffer exhibit the [characteristic] absorbance peaks (solid line) shown in the normalized absorbance spectral plot of Fig. 9A. Immobilizing the RC- chlorosomes in PVAC polymer, however, destroyed the chlorosomes as evidenced by the dashed line normalized absorbance absorbent spectrum plotted in Fig. 9A.~~ This was true of other immobilization attempts with other polymers.

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related to the isolation techniques that result in purified chlorosomes. An abbreviated form of the important basic mechanisms of energy transfer that occur between the molecules of the RC⁺ chlorosome are as depicted in Fig. 10.

On p. 19, lines 1-10:

Another technique utilized the evaporation procedure as well as an aqueous method to allow incorporation of the chlorosomes onto a glass surface. Both techniques start with taking 0.5 µl of a known concentration of chlorosomes and placing it onto a borosilicate glass coverslip (Fisher Scientific). In the evaporation method, evaporation, under vacuum, is performed overnight and then the sample is sealed onto a fluorescent antibody microslide (Fisher Scientific). In the physical adsorption method, the slide is prepared in the aqueous phase and inverted during sealing, thus allowing for ensuring a hydrated sample as well as diffusion of the chlorosomes onto the surface of the hydrophobic glass. Samples were also studied under laser scanning confocal microscopy (instrument from LEICA) to investigate orientation and selected function (i.e. stability) was observed with absorbance spectroscopy of the sample afterwards.

The claims are amended to read as follows.

27. (currently amended) A method of making a hybrid photoactive device, comprising:
including:

- (a) providing photosynthetic chlorosome-containing bacteria *Chloroflexus G. aurantiacus*;[[],]
- (b) extracting the RC⁺ chlorosomes from the bacteria;[[],]
- (c) providing a photoactive semiconductor[[],] and

(d) locating the RC⁻ chlorosomes proximate a light receiving surface of the photoactive semiconductor, wherein step (c) includes providing a photoactive semiconductor having a light response that is diminished at a first range of light wavelengths, and step (a) comprises choosing an RC⁻ chlorosome having

(i) light response that is enhanced at a second range of light wavelengths that coincides, at least in part, with the first range of light wavelengths, and

(ii) light emission outside the first range of light wavelengths, and

wherein choosing an RC⁻ chlorosome comprises force adapting bacteria with chlorosomes with the light response enhanced at the second range of light wavelengths and light emission outside the first range.

28. (currently amended) The method according to claim 27, wherein force adapting comprises

(a) design of experiment determination of environmental factors forcing adaptation of bacteria based upon multiple environmental variables applied to C. auranticus sample bacteria; and

(b) exposing the C. auranticus [sample] bacteria to an environment in which the factors identified in step (b) are present to force adapt the samples.

the previous step

35-43. (canceled)

Authorization for this Examiner's Amendment was given by telephone by Applicants' agent, Mr. Thomas MacBlain, on August ??, 2005.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rosanne Kosson whose telephone number is 571-272-2923. The examiner can normally be reached on Monday-Friday, 8:30-6:00, with alternate Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jon Weber can be reached on 571-272-0925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Rosanne Kosson
Examiner
Art Unit 1653

rk/2005-08-08